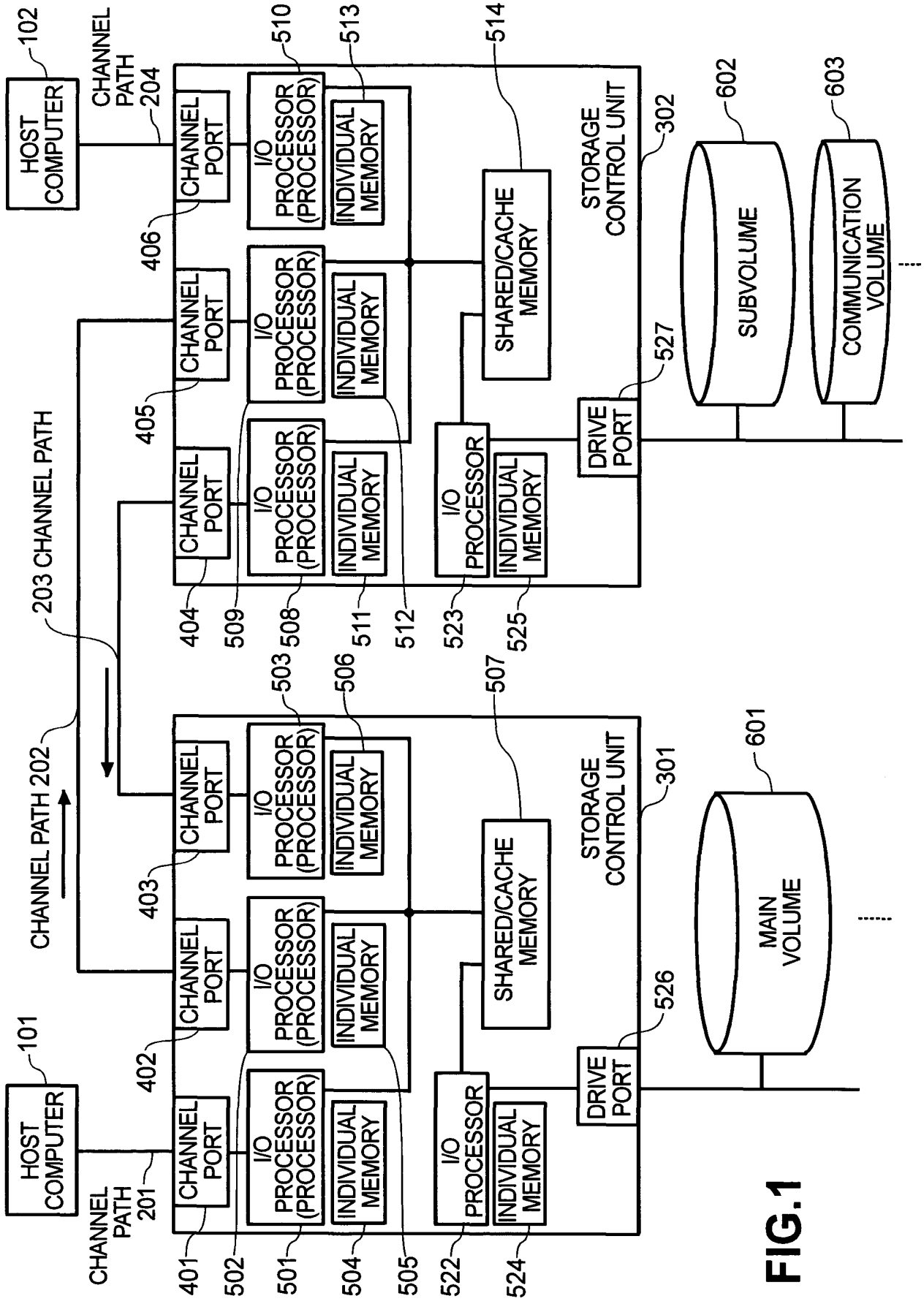

HOST COMPUTER
102
101
CHANNEL PATH
204
201
CHANNEL PATH 202
203 CHANNEL PATH
CHANNEL PORT
I/O PROCESSOR (PROCESSOR)
INDIVIDUAL MEMORY
I/O PROCESSOR
SHARED/CACHE MEMORY
STORAGE CONTROL UNIT
302
301
DRIVE PORT
SUBVOLUME
COMMUNICATION VOLUME
MAIN VOLUME
601
602
603
401
402
403
404
405
406
501
502
503
504
505
506
507
508
509
510
511
512
513
514
522
523
524
525
526
527

FIG.1

FIG.2

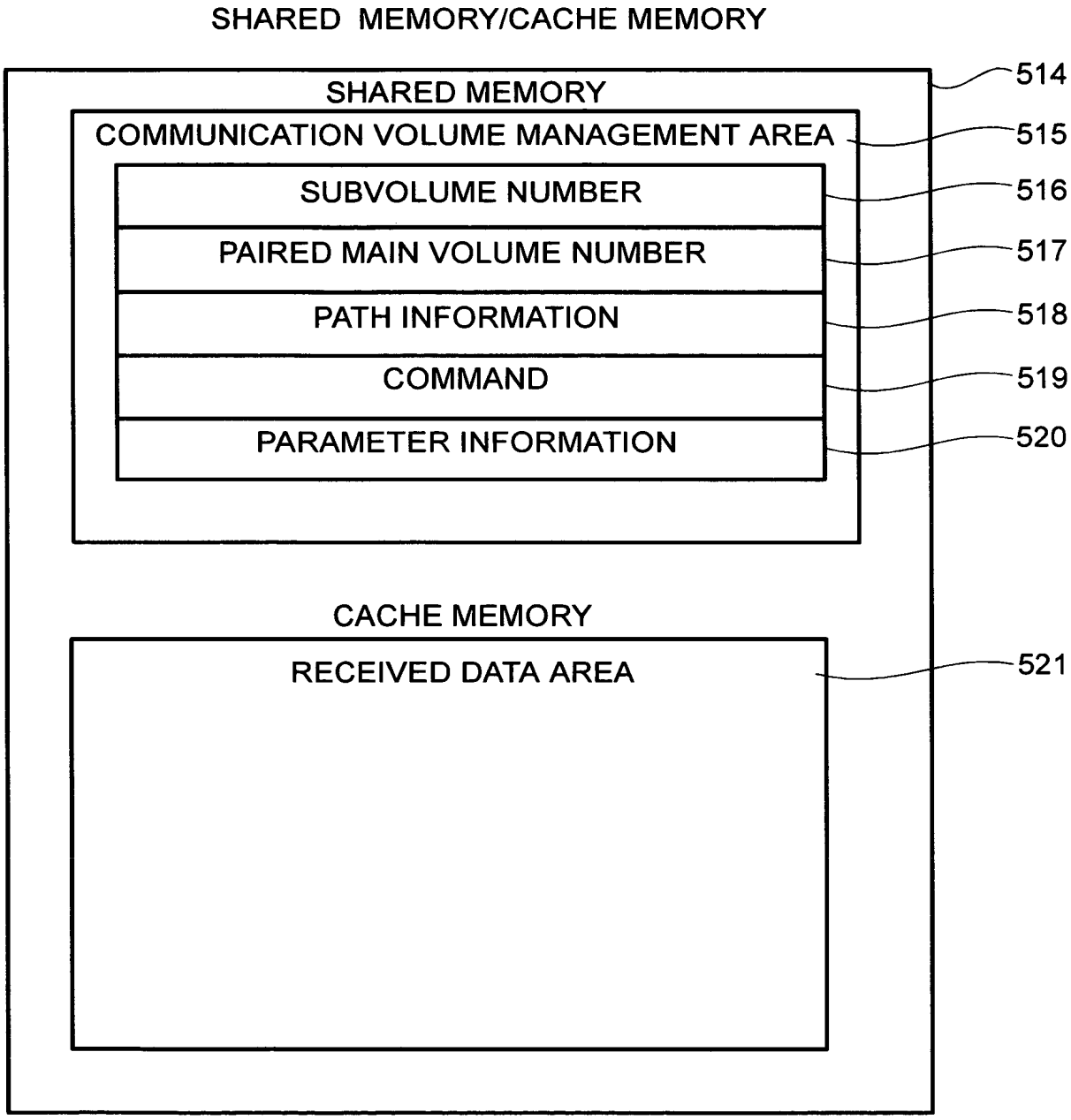

SHARED MEMORY/CACHE MEMORY
SHARED MEMORY
514
COMMUNICATION VOLUME MANAGEMENT AREA
515
SUBVOLUME NUMBER
516
PAIRED MAIN VOLUME NUMBER
517
PATH INFORMATION
518
COMMAND
519
PARAMETER INFORMATION
520
CACHE MEMORY
RECEIVED DATA AREA
521

FIG.3

I/O PROCESSING FLOWCHART (JOB1: I/O PROCESSOR 510)

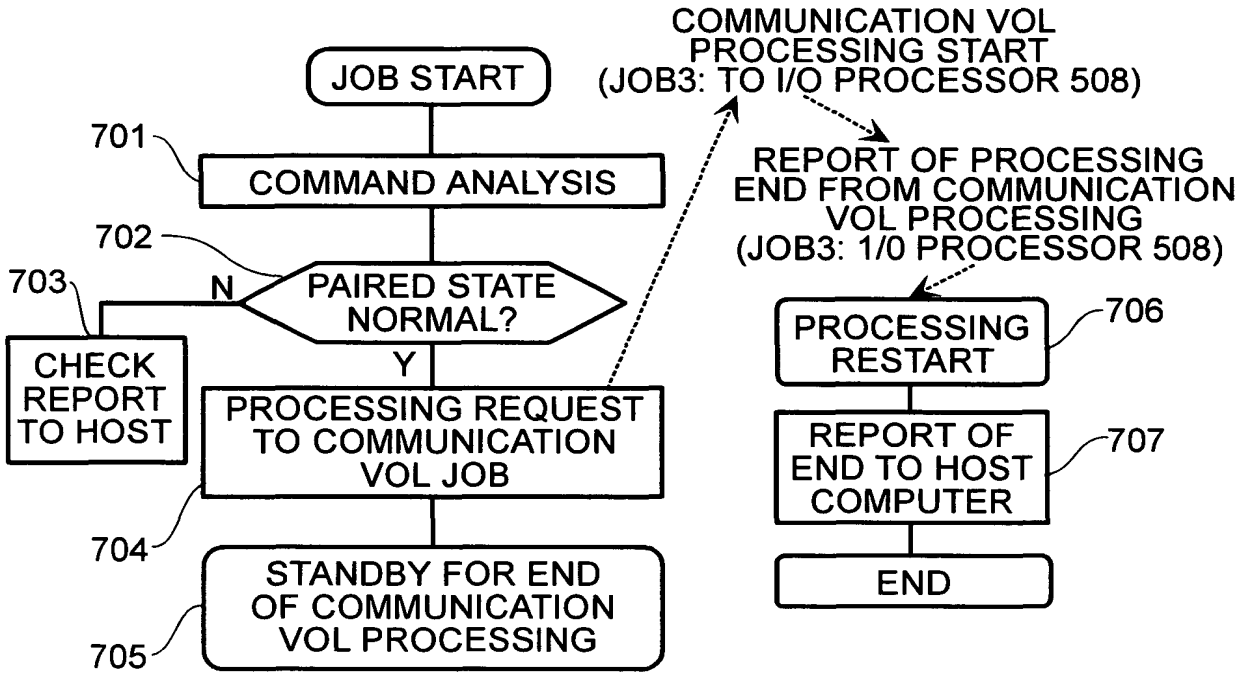


FIG.4

I/O PROCESSING (JOB2: I/O PROCESSOR 509)

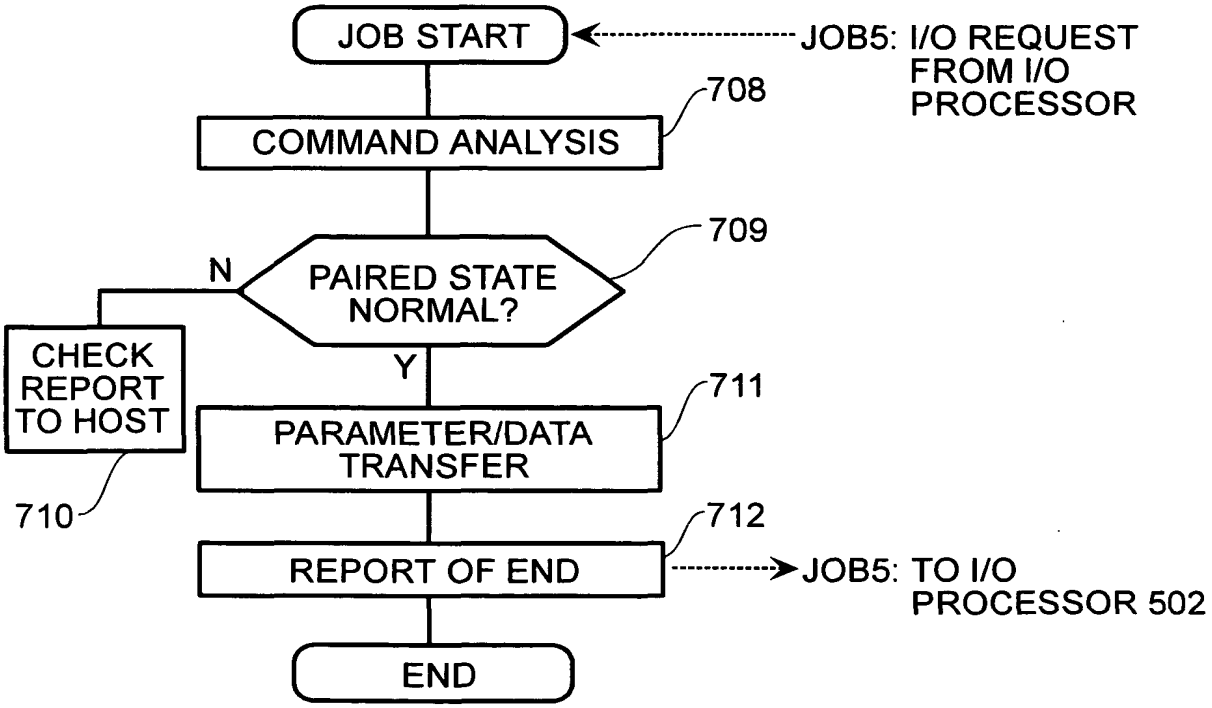


FIG.5

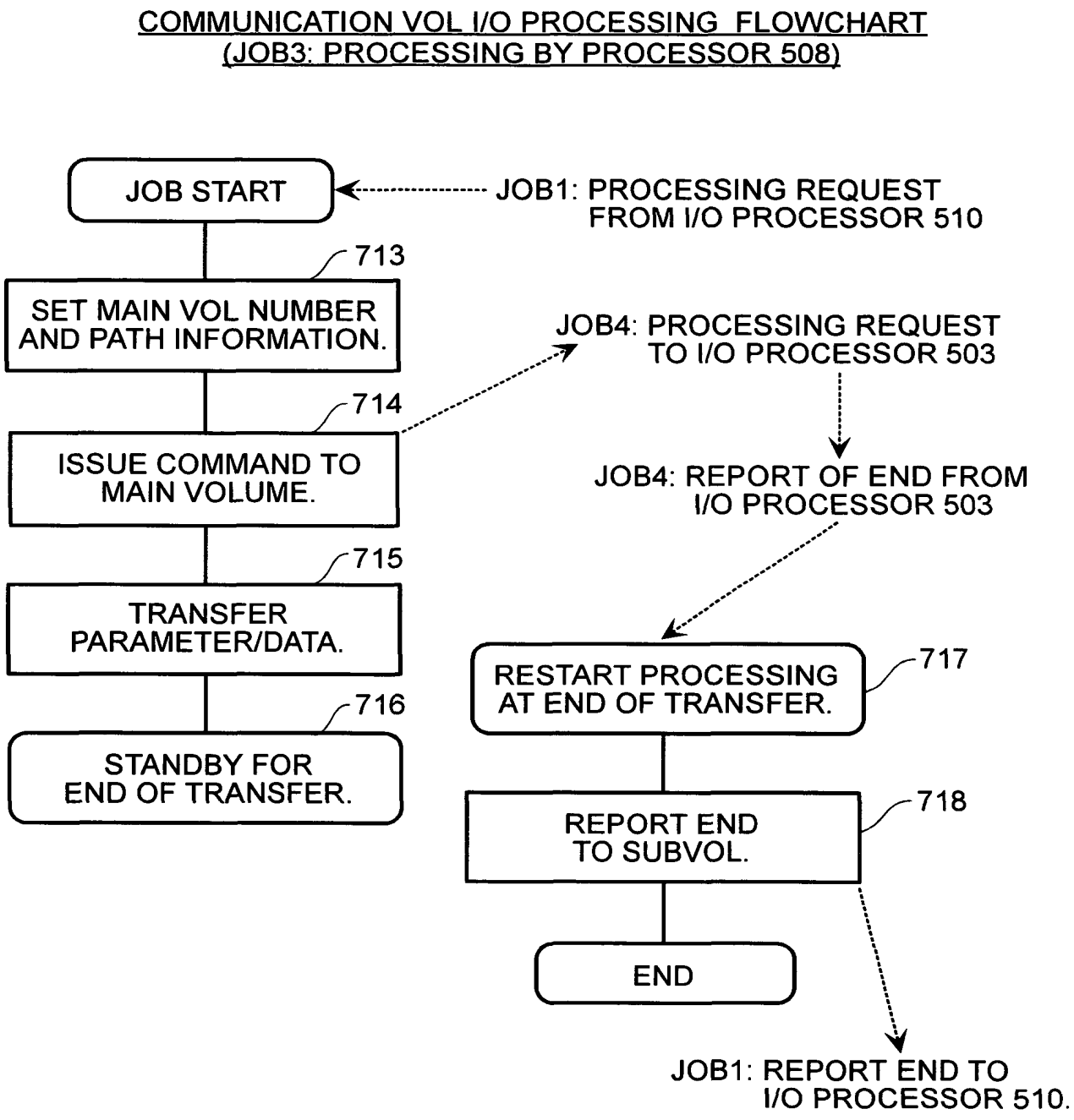

COMMUNICATION VOL I/O PROCESSING FLOWCHART
(JOB3: PROCESSING BY PROCESSOR 508)
JOB START
JOB1: PROCESSING REQUEST FROM I/O PROCESSOR 510
713
SET MAIN VOL NUMBER AND PATH INFORMATION.
JOB4: PROCESSING REQUEST TO I/O PROCESSOR 503
714
ISSUE COMMAND TO MAIN VOLUME.
JOB4: REPORT OF END FROM I/O PROCESSOR 503
715
TRANSFER PARAMETER/DATA.
716
STANDBY FOR END OF TRANSFER.
RESTART PROCESSING AT END OF TRANSFER.
717
REPORT END TO SUBVOL.
718
END
JOB1: REPORT END TO I/O PROCESSOR 510.

FIG.6

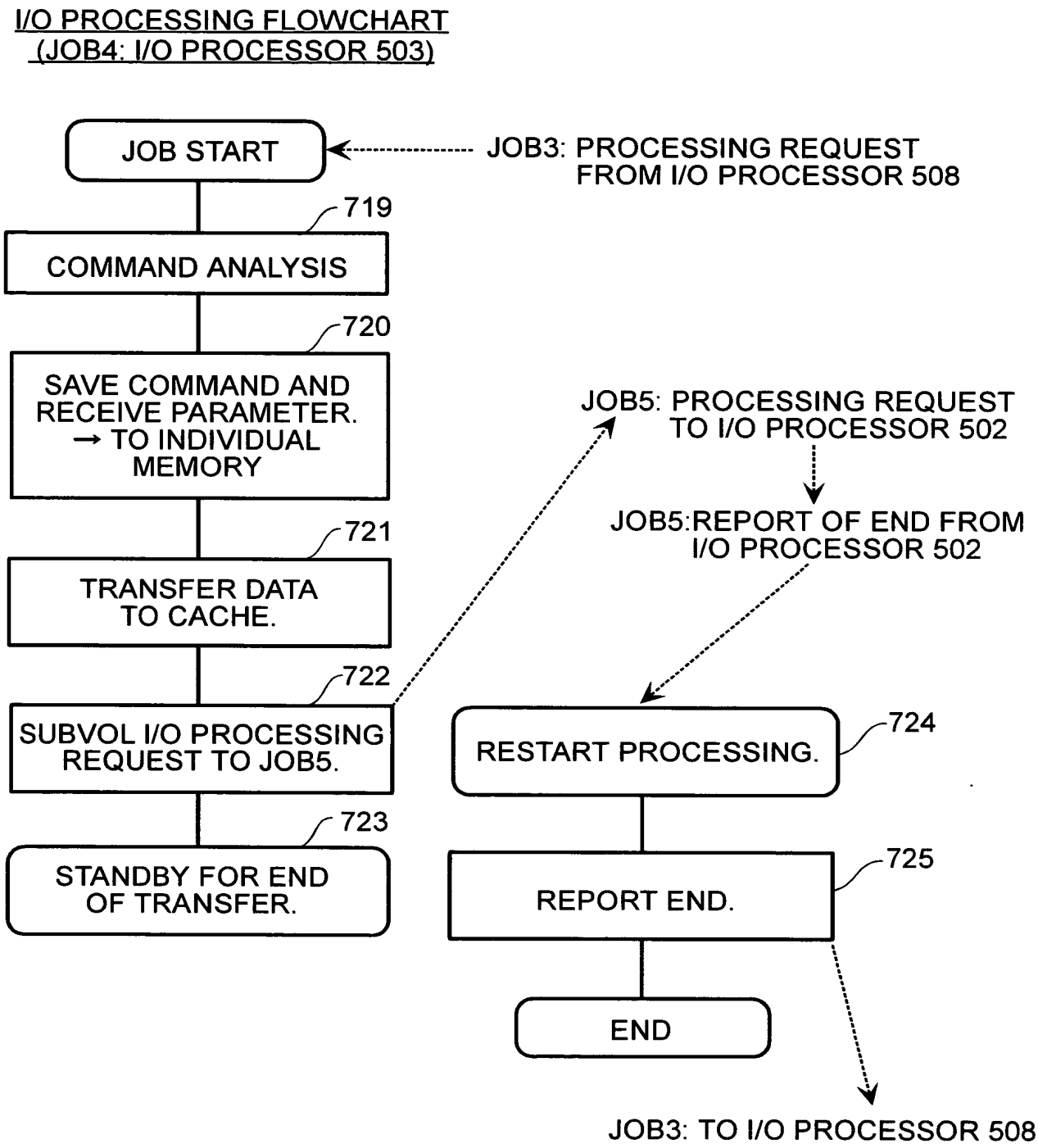

I/O PROCESSING FLOWCHART
(JOB4: I/O PROCESSOR 503)
JOB START
JOB3: PROCESSING REQUEST FROM I/O PROCESSOR 508
719
COMMAND ANALYSIS
720
SAVE COMMAND AND RECEIVE PARAMETER. → TO INDIVIDUAL MEMORY
721
TRANSFER DATA TO CACHE.
722
SUBVOL I/O PROCESSING REQUEST TO JOB5.
723
STANDBY FOR END OF TRANSFER.
JOB5: PROCESSING REQUEST TO I/O PROCESSOR 502
JOB5:REPORT OF END FROM I/O PROCESSOR 502
724
RESTART PROCESSING.
725
REPORT END.
END
JOB3: TO I/O PROCESSOR 508

FIG.7

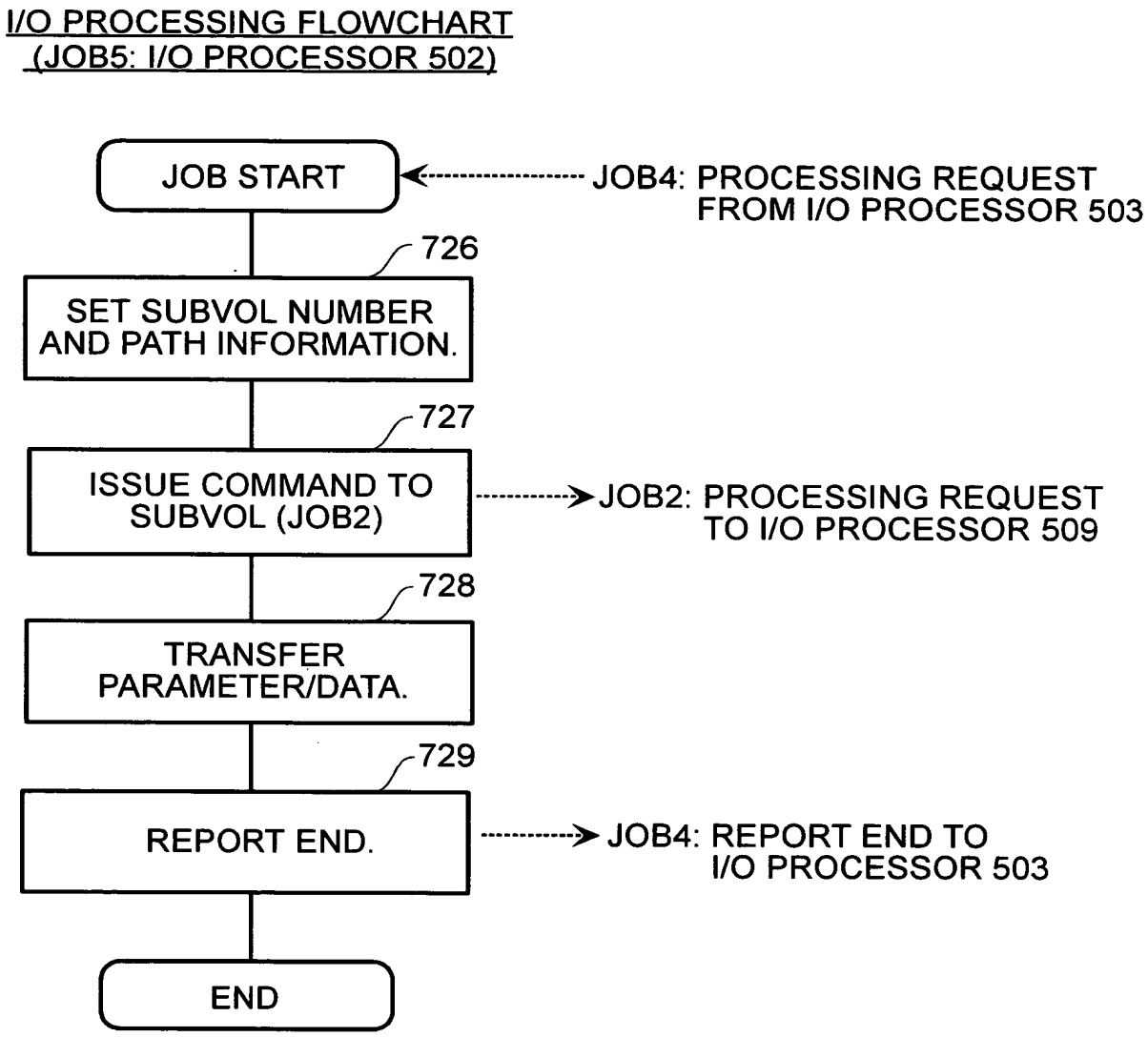

I/O PROCESSING FLOWCHART
(JOB5: I/O PROCESSOR 502)
JOB START
JOB4: PROCESSING REQUEST FROM I/O PROCESSOR 503
726
SET SUBVOL NUMBER AND PATH INFORMATION.
727
ISSUE COMMAND TO SUBVOL (JOB2)
JOB2: PROCESSING REQUEST TO I/O PROCESSOR 509
728
TRANSFER PARAMETER/DATA.
729
REPORT END.
JOB4: REPORT END TO I/O PROCESSOR 503
END

FIG.8

FLOWCHART OF PROCESSINGS BETWEEN PAIRED VOLUMES

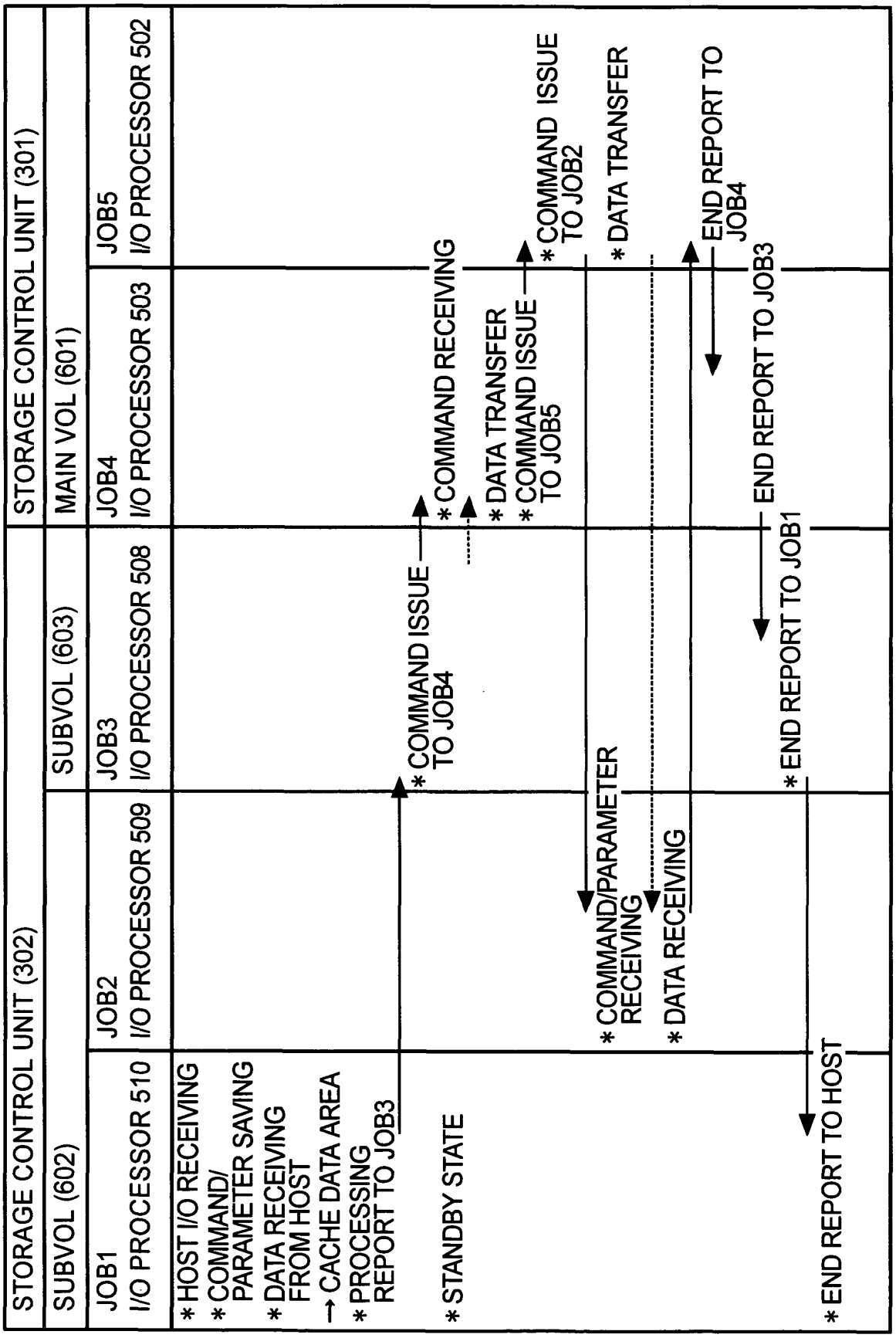
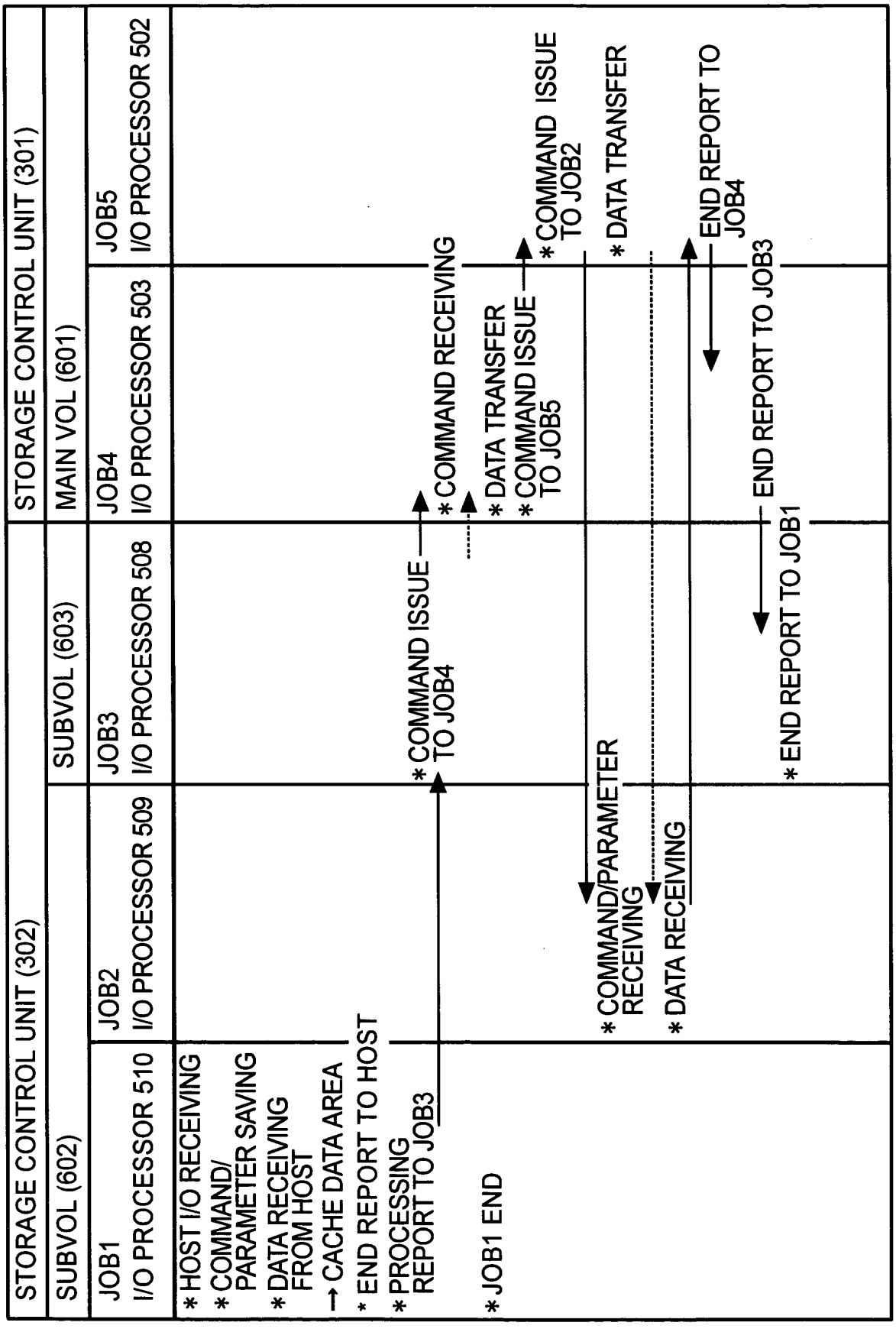


FIG.9 FLOWCHART OF PROCESSINGS BETWEEN PAIRED VOLUMES (ASYNCHRONOUS TRANSFER)



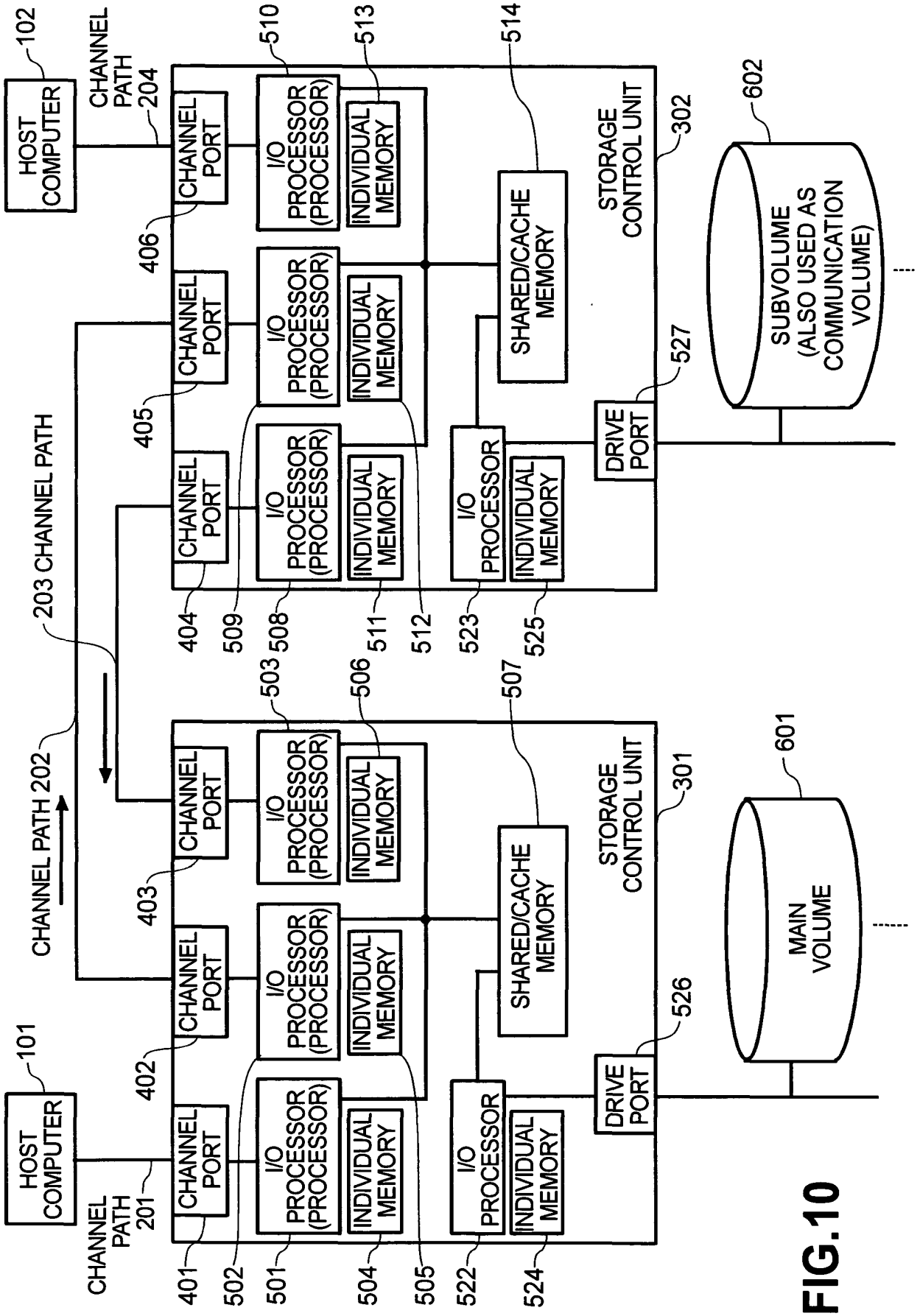

HOST COMPUTER
101
102
CHANNEL PATH
201
204
203 CHANNEL PATH
CHANNEL PATH 202
CHANNEL PORT
I/O PROCESSOR (PROCESSOR)
INDIVIDUAL MEMORY
I/O PROCESSOR
SHARED/CACHE MEMORY
STORAGE CONTROL UNIT
301
302
DRIVE PORT
MAIN VOLUME
SUBVOLUME (ALSO USED AS COMMUNICATION VOLUME)
401
402
403
404
405
406
501
502
503
504
505
506
507
508
509
510
511
512
513
514
522
523
524
525
526
527
601
602

FIG.10

FIG.11

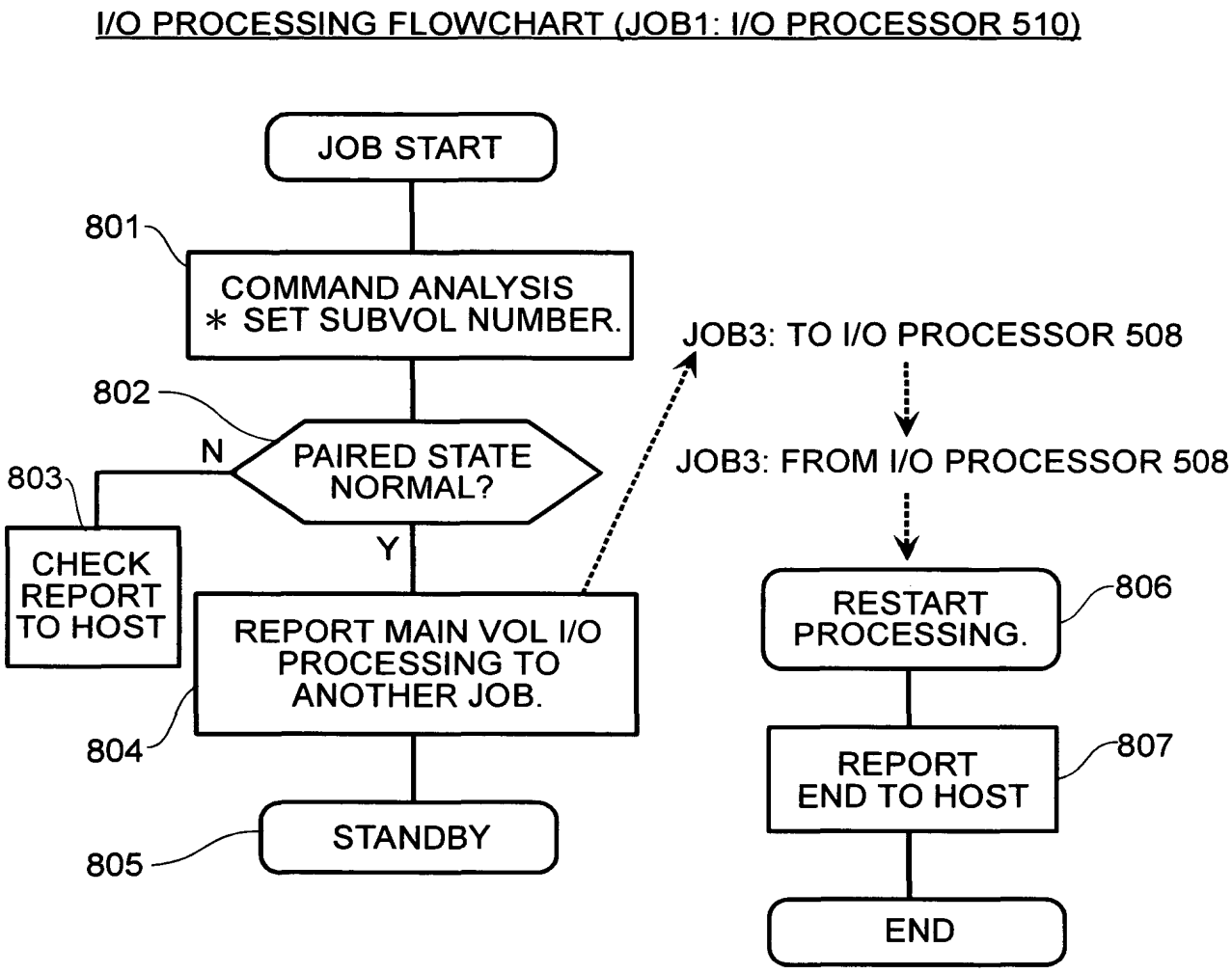

I/O PROCESSING FLOWCHART (JOB1: I/O PROCESSOR 510)
JOB START
801
COMMAND ANALYSIS
* SET SUBVOL NUMBER.
802
N
PAIRED STATE NORMAL?
803
CHECK REPORT TO HOST
Y
REPORT MAIN VOL I/O PROCESSING TO ANOTHER JOB.
804
STANDBY
805
JOB3: TO I/O PROCESSOR 508
JOB3: FROM I/O PROCESSOR 508
RESTART PROCESSING.
806
REPORT END TO HOST
807
END

FIG.12

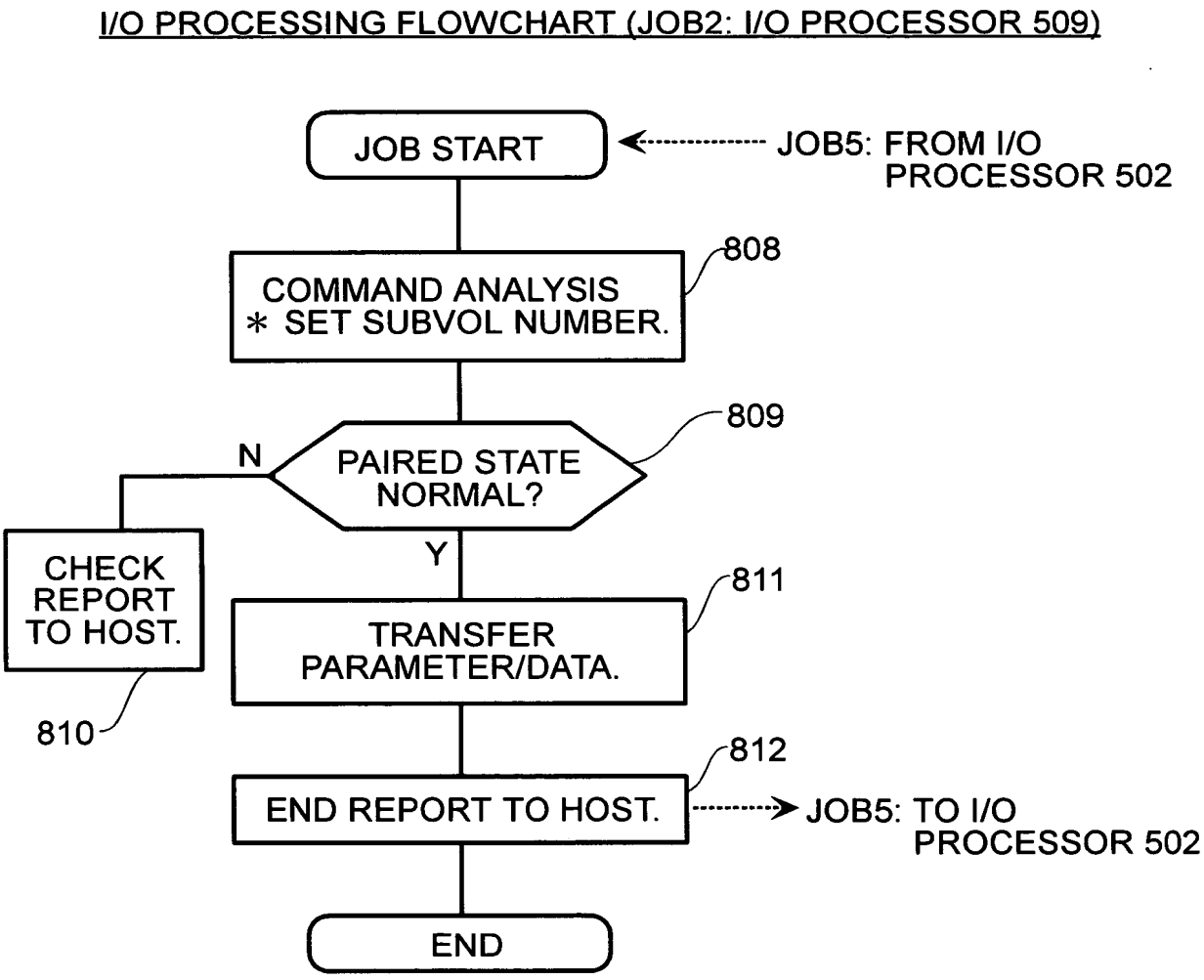

I/O PROCESSING FLOWCHART (JOB2: I/O PROCESSOR 509)
JOB START
JOB5: FROM I/O PROCESSOR 502
COMMAND ANALYSIS * SET SUBVOL NUMBER.
808
PAIRED STATE NORMAL?
809
N
Y
CHECK REPORT TO HOST.
810
TRANSFER PARAMETER/DATA.
811
END REPORT TO HOST.
812
JOB5: TO I/O PROCESSOR 502
END

FIG.13

I/O PROCESSING FLOWCHART (JOB3: I/O PROCESSOR 508)

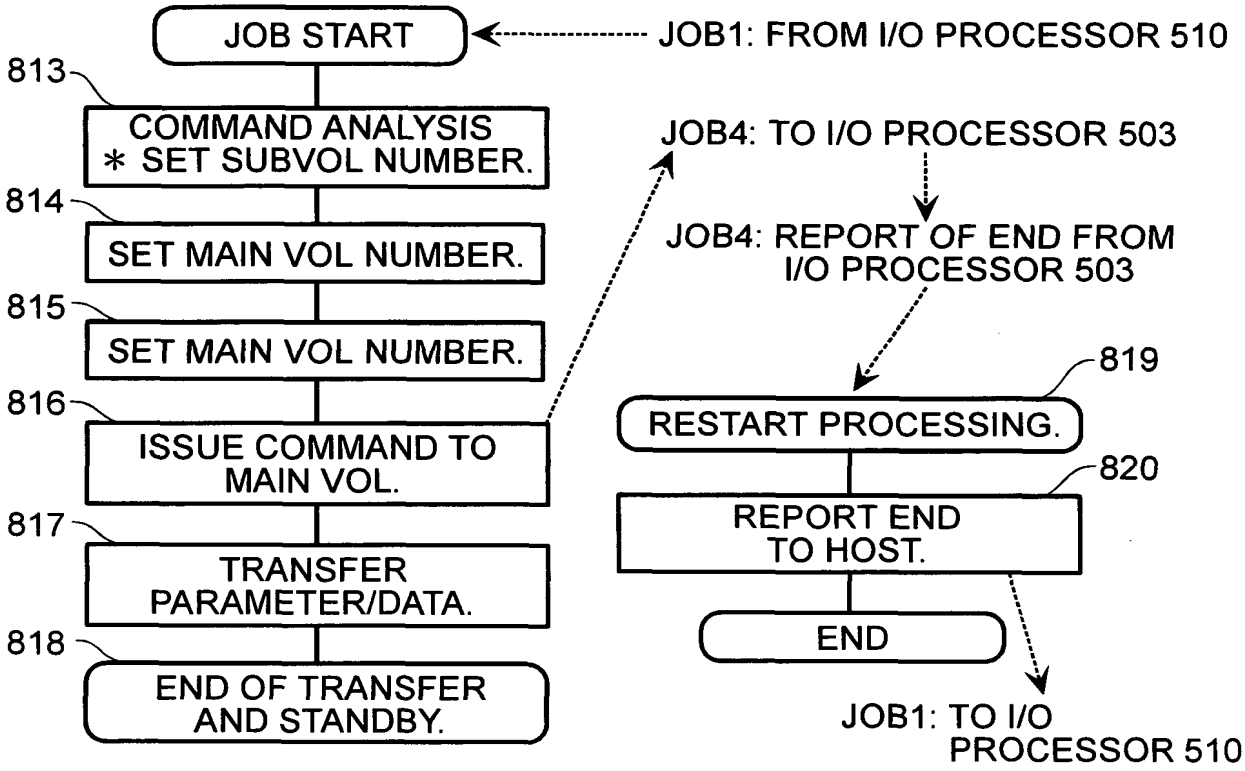


FIG.14

I/O PROCESSING FLOWCHART (JOB4: I/O PROCESSOR 503)

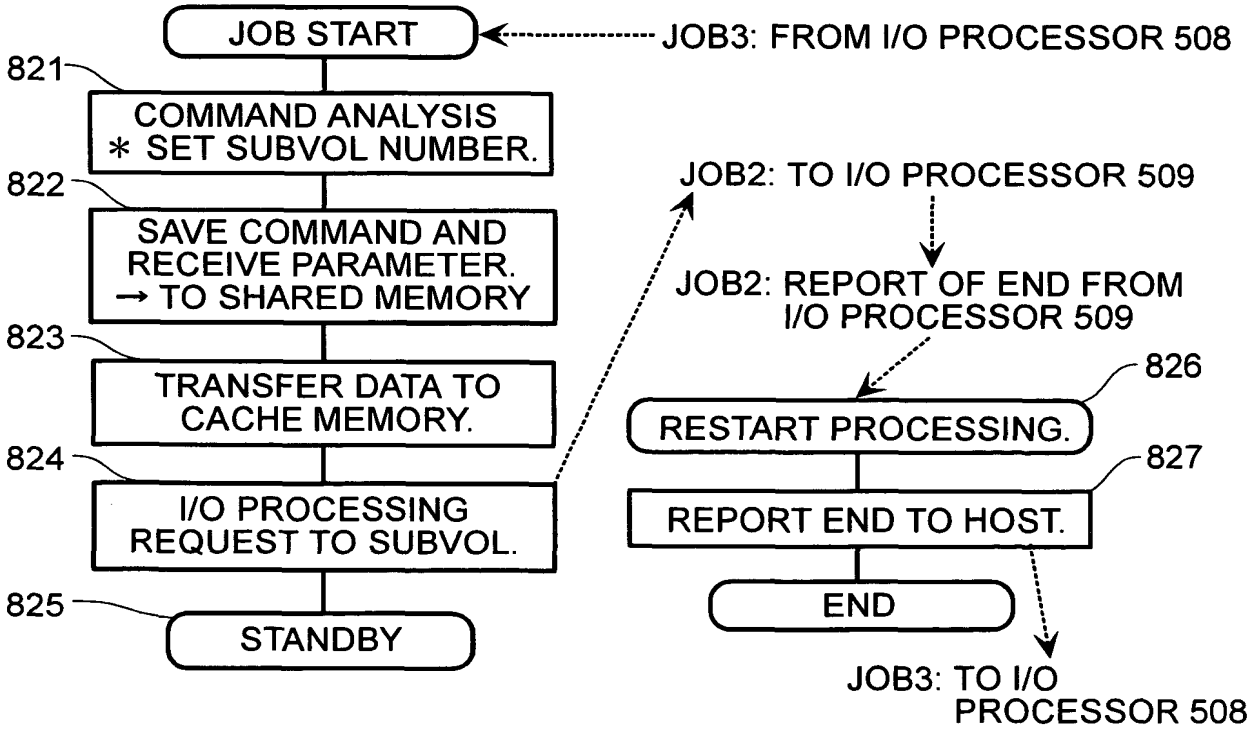


FIG.15

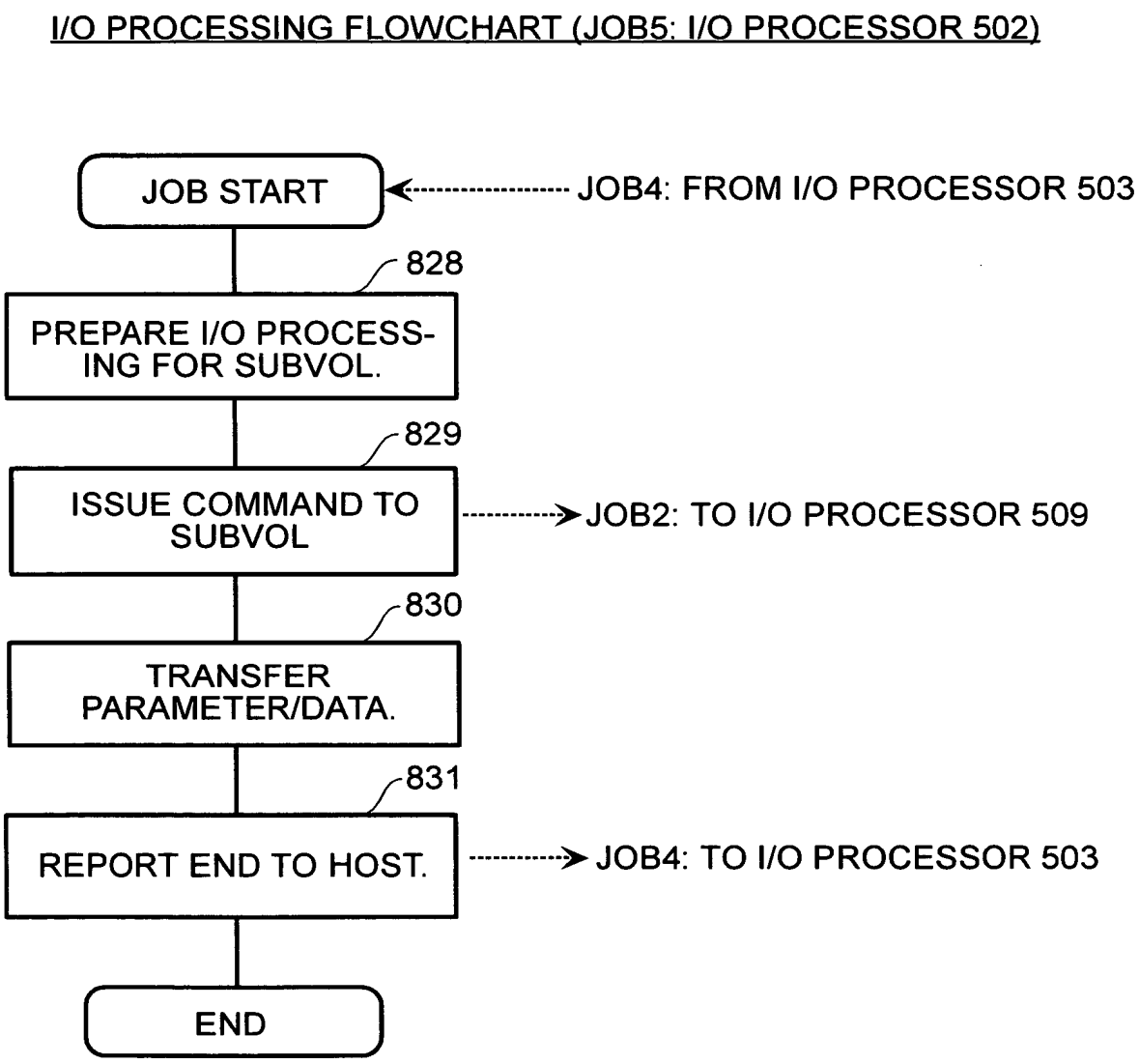

I/O PROCESSING FLOWCHART (JOB5: I/O PROCESSOR 502)
JOB START
JOB4: FROM I/O PROCESSOR 503
828
PREPARE I/O PROCESS-ING FOR SUBVOL.
829
ISSUE COMMAND TO SUBVOL
JOB2: TO I/O PROCESSOR 509
830
TRANSFER PARAMETER/DATA.
831
REPORT END TO HOST.
JOB4: TO I/O PROCESSOR 503
END

FIG.16 FLOWCHART OF PROCESSINGS BETWEEN PAIRED VOLUMES

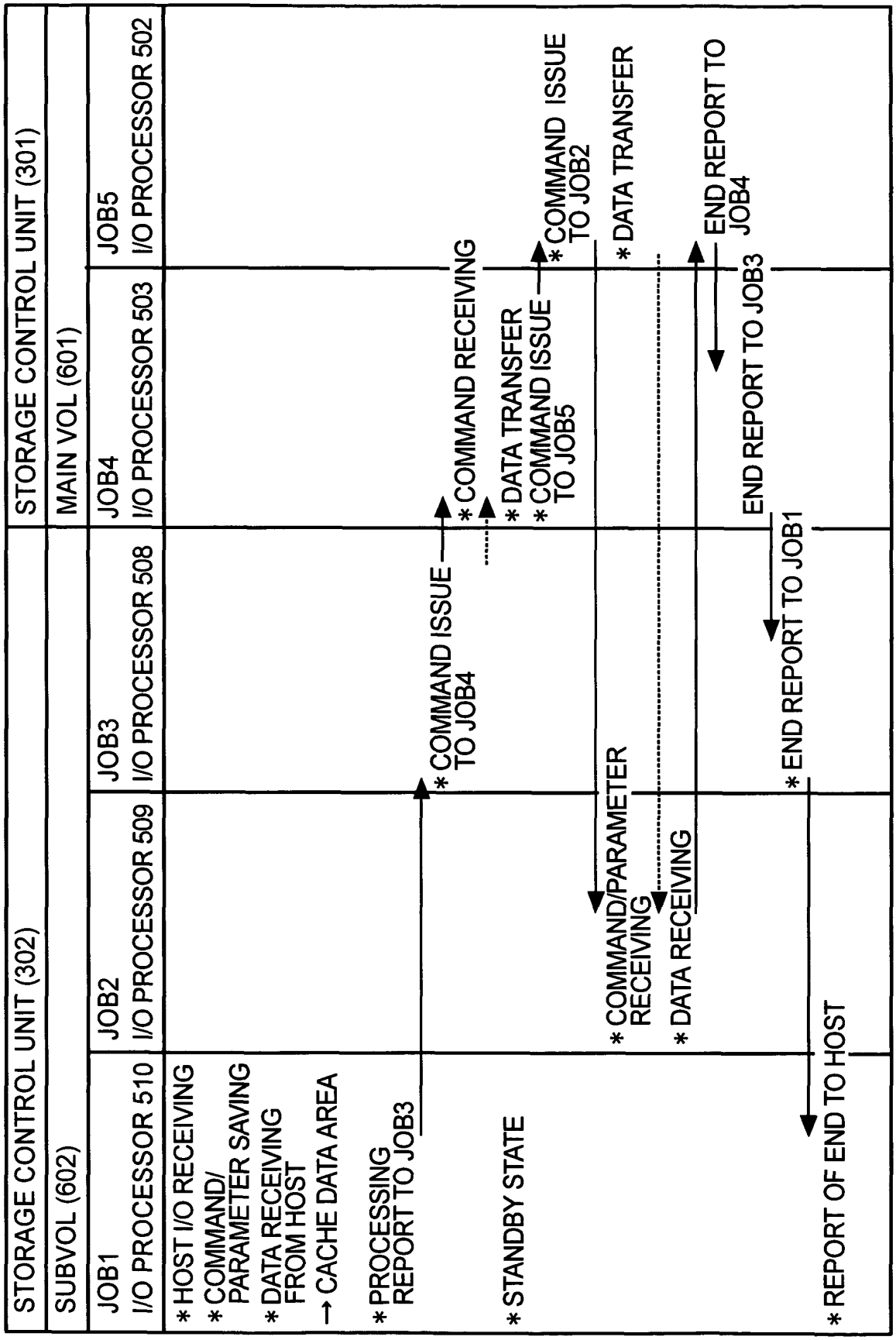


FIG.17

I/O PROCESSING FLOWCHART (ANY OF MAIN AND SUB)

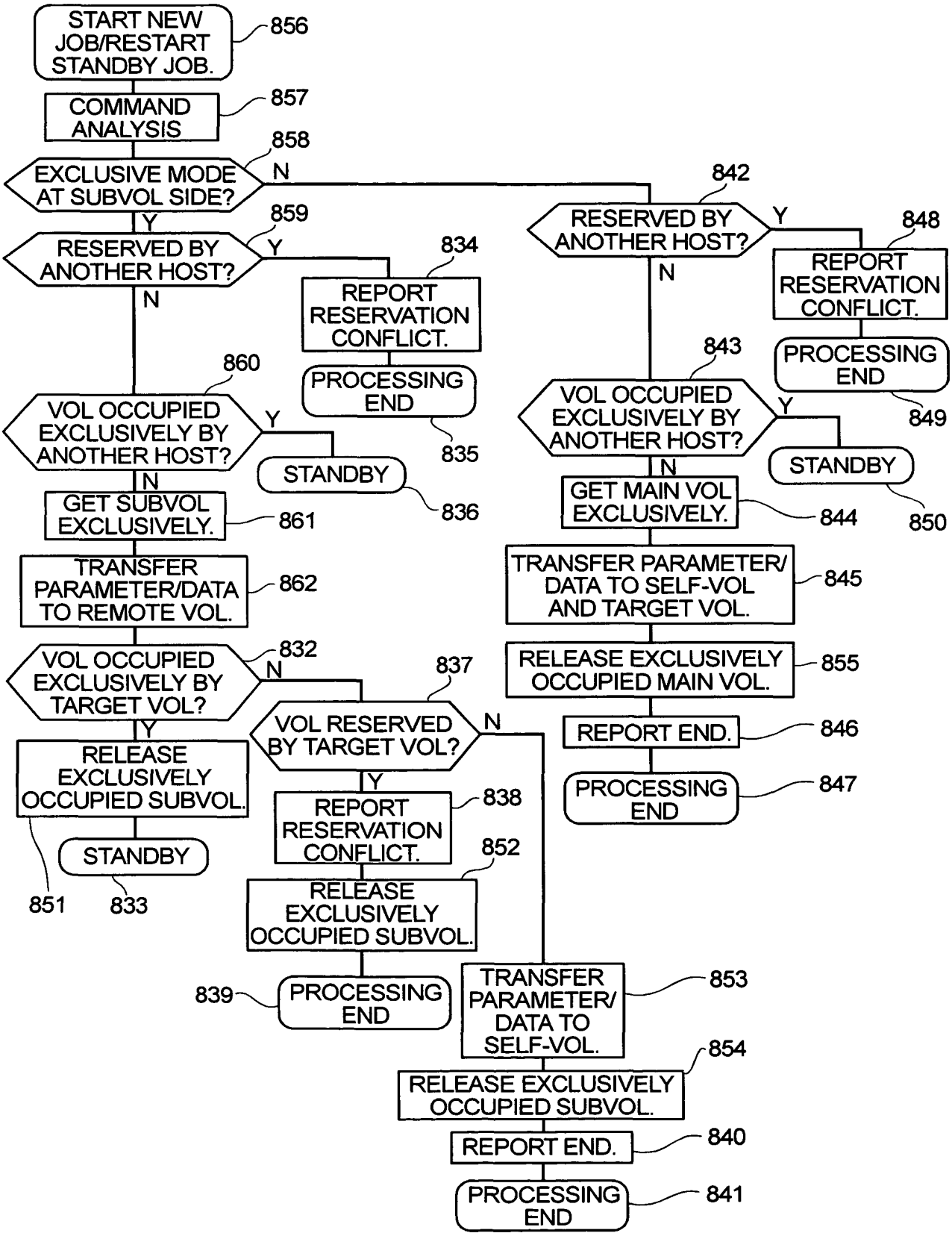


FIG.18

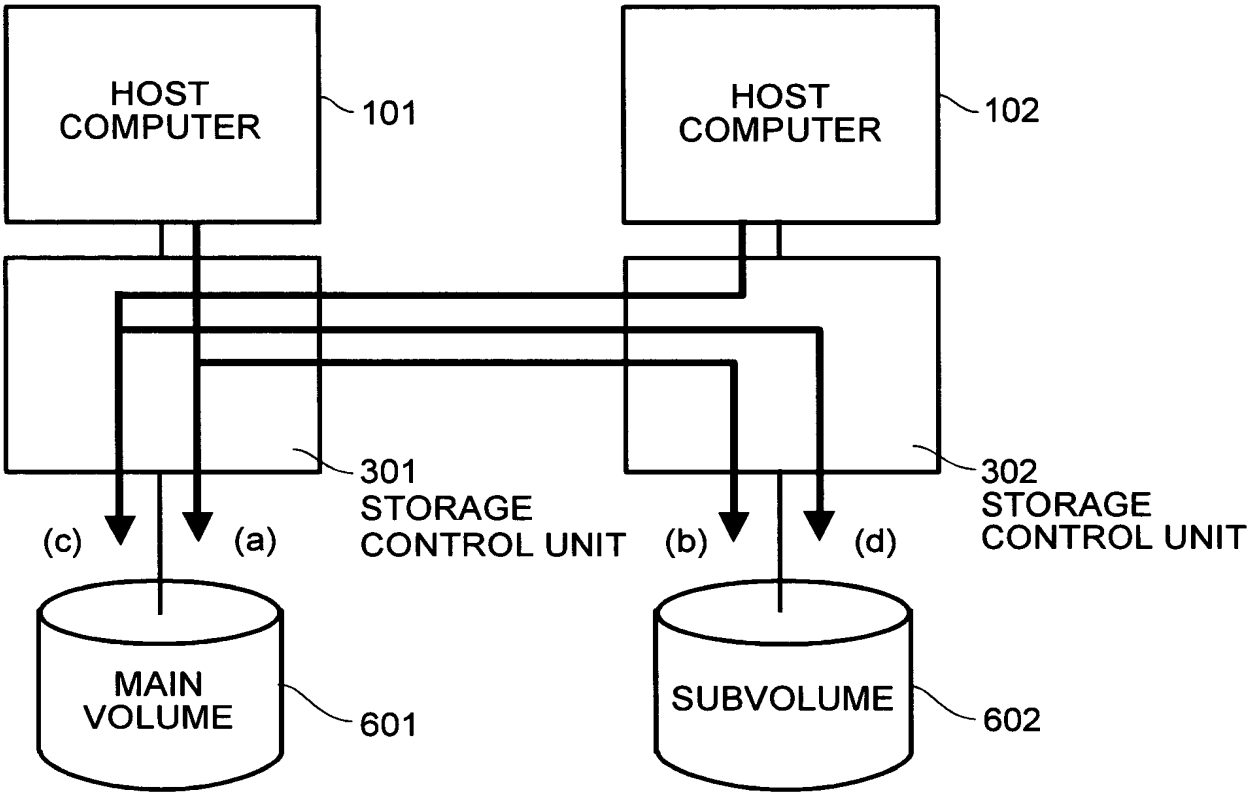

HOST COMPUTER
101
HOST COMPUTER
102
301 STORAGE CONTROL UNIT
302 STORAGE CONTROL UNIT
(c)
(a)
(b)
(d)
MAIN VOLUME
601
SUBVOLUME
602

FIG.19

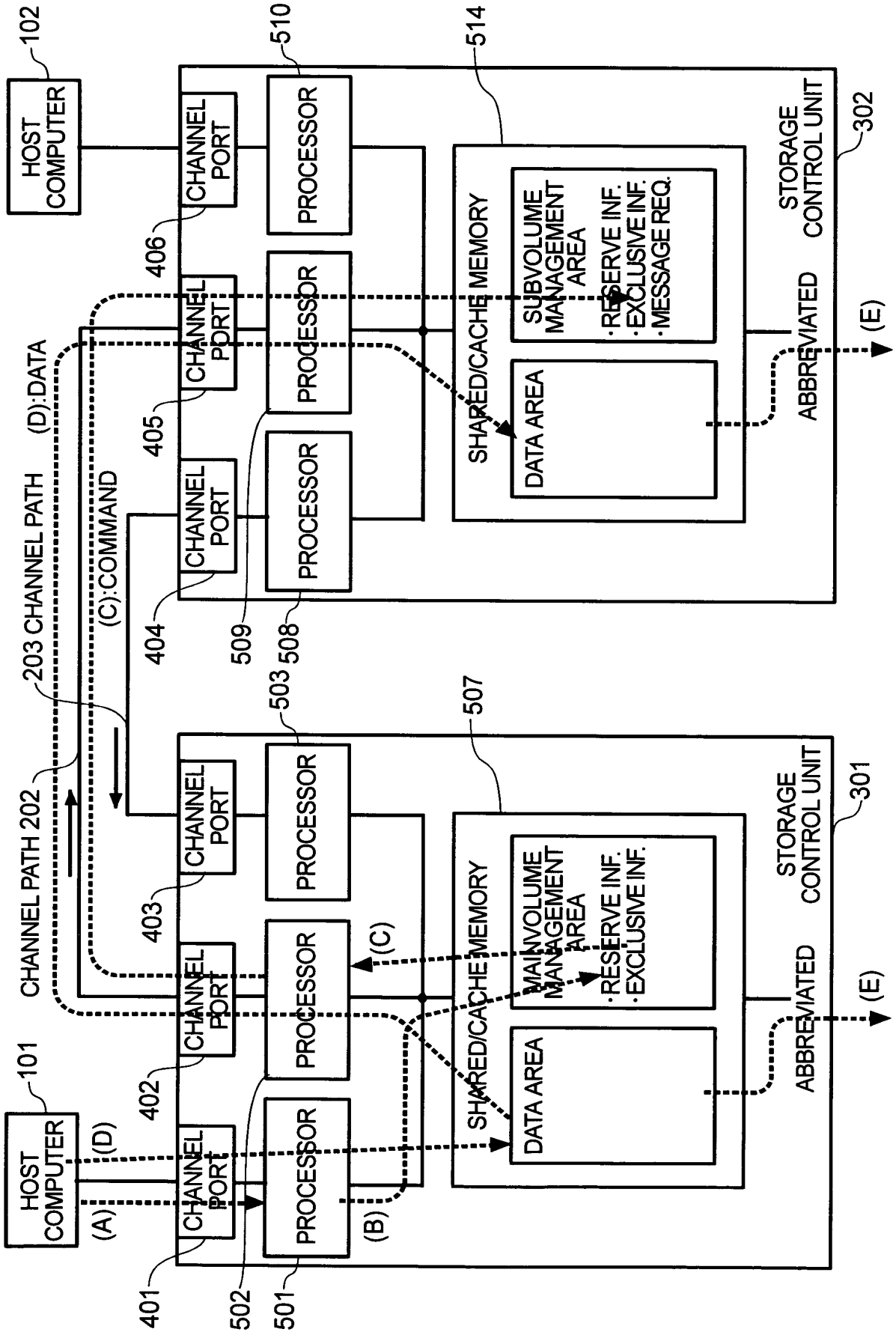
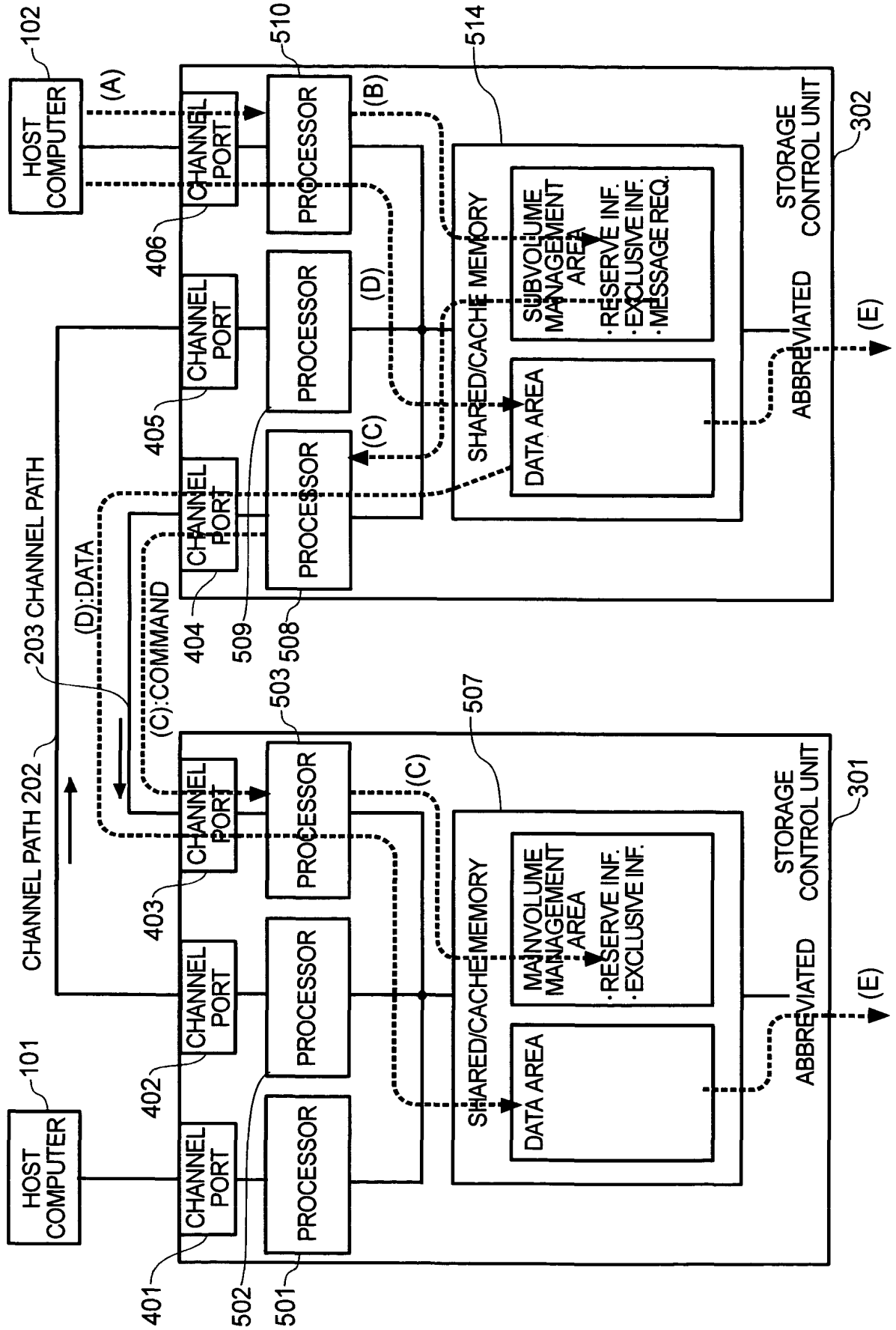

HOST COMPUTER
102
101
CHANNEL PORT
PROCESSOR
SHARED/CACHE MEMORY
SUBVOLUME MANAGEMENT AREA
·RESERVE INF.
·EXCLUSIVE INF.
·MESSAGE REQ.
MAINVOLUME MANAGEMENT AREA
DATA AREA
STORAGE CONTROL UNIT
302
301
ABBREVIATED
(E)
(A)
(B)
(C)
(D)
(D):DATA
(C):COMMAND
203 CHANNEL PATH
CHANNEL PATH 202
401
402
403
404
405
406
501
502
503
504
507
508
509
510
514

FIG.20


HOST COMPUTER
101
102
(A)
(B)
(C)
(D)
(E)
CHANNEL PORT
PROCESSOR
SHARED/CACHE MEMORY
MAIN/SUB VOLUME MANAGEMENT AREA
·RESERVE INF.
·EXCLUSIVE INF.
·MESSAGE REQ.
DATA AREA
STORAGE CONTROL UNIT
301
302
ABBREVIATED
CHANNEL PATH 202
203 CHANNEL PATH
(C):COMMAND
(D):DATA
401
402
403
404
405
406
501
502
503
504
505
506
507
508
509
510
511
512
513
514